Wrapping Up: Ch. 3 - Linear programming, Solving Systems of Equations

1) Do you feel that there was less homework than the previous unit and did that help you in getting them turned in on time?

2) What can you do to improve your learning of the next unit so that you can achieve a better grade?

3) How can I (Mr. Hackenberg) help you achieve #2?

HW	Cookies A	Test
0	0/25	85/100
30%	70%	

$$0 + \left(\frac{85}{125}\right).7$$

$$0 + .476$$

$$= 48\%$$

4.2) (17), 30

4.1) 33, 35

(17) $\begin{bmatrix} 2 & 4 \\ 8 & 12 \end{bmatrix} = \begin{bmatrix} 4x-6 & -10t+5x \\ 4x & 15t+1.5x \end{bmatrix}$

$4x-6=2$

$+6 \quad +6$

$\frac{4x}{4} = \frac{8}{4}$

$x=2$

$\begin{bmatrix} 2 & -10t+5(2) \\ 8 & 15t+1.5(2) \end{bmatrix}$

$12 = 15t+1.5(2)$

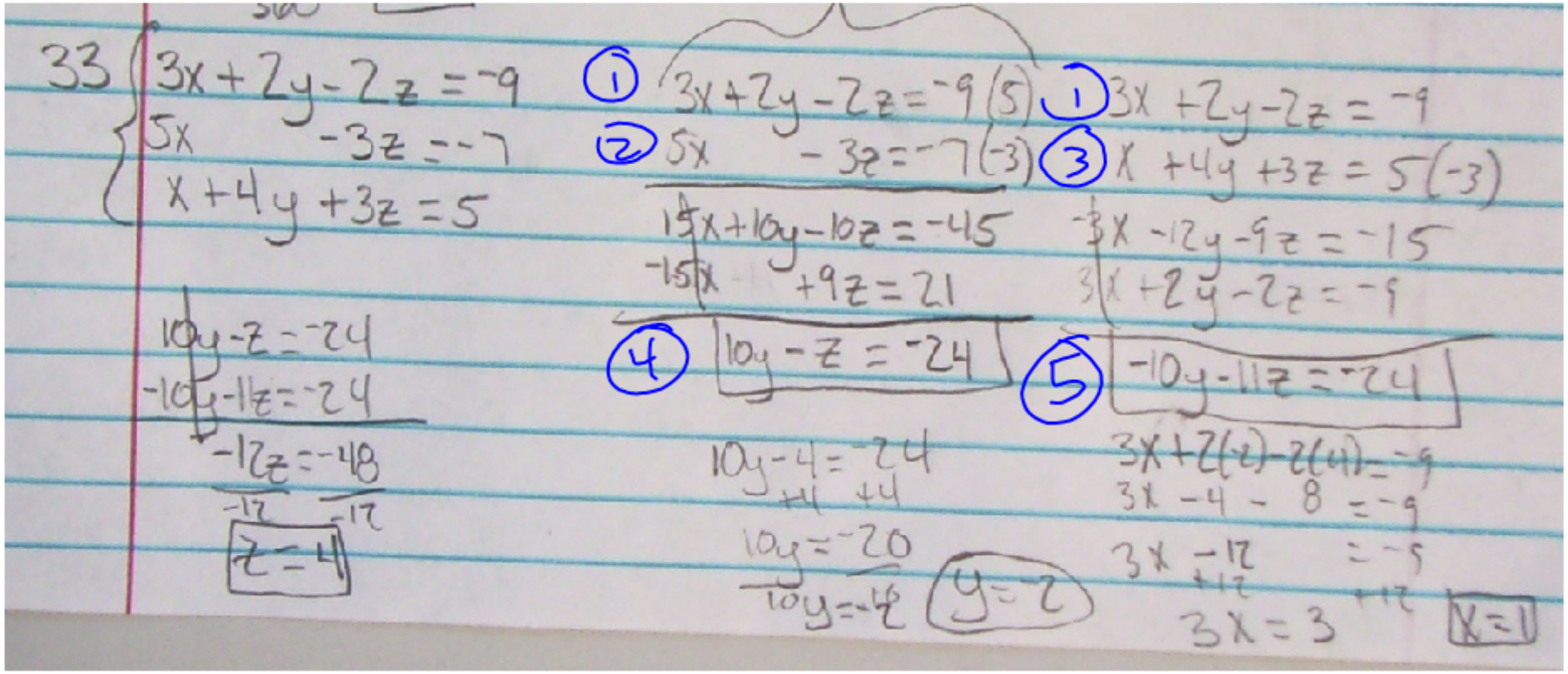
$12 = 15t+3$

$-3 \quad -3$

$9 = 15t$

$\frac{9}{15} = \frac{15t}{15}$

$\frac{9}{15} = t$


33
3x + 2y - 2z = -9
5x - 3z = -7
x + 4y + 3z = 5
10y - z = -24
-10y - 11z = -24
-12z = -48
z = 4
1 3x + 2y - 2z = -9 (5)
2 5x - 3z = -7 (-3)
15x + 10y - 10z = -45
-15x + 9z = 21
4 10y - z = -24
10y - 4 = -24
+4 +4
10y = -20
y = -2
1 3x + 2y - 2z = -9
3 x + 4y + 3z = 5 (-3)
-3x - 12y - 9z = -15
3x + 2y - 2z = -9
5 -10y - 11z = -24
3x + 2(-2) - 2(4) = -9
3x - 4 - 8 = -9
3x - 12 = -9
+12 +12
3x = 3
x = 1

Matrix Multiplication

Scalar Multiplication: $3\begin{bmatrix} 3 & 5 \\ 2 & 8 \end{bmatrix} = \begin{bmatrix} 9 & 15 \\ 6 & 24 \end{bmatrix}$

Ex / Solve for: $4X + 2\begin{bmatrix} 3 & 4 \\ -2 & 1 \end{bmatrix} = \begin{bmatrix} 10 & 0 \\ 4 & 2 \end{bmatrix}$

$$4X + \begin{bmatrix} 6 & 8 \\ -4 & 2 \end{bmatrix} = \begin{bmatrix} 10 & 0 \\ 4 & 2 \end{bmatrix}$$

$$4X = \begin{bmatrix} 10 & 0 \\ 4 & 2 \end{bmatrix} - \begin{bmatrix} 6 & 8 \\ -4 & 2 \end{bmatrix}$$

$$\frac{1}{4} \cdot 4X = \begin{bmatrix} 4 & -8 \\ 8 & 0 \end{bmatrix} \cdot \frac{1}{4}$$

$$X = \begin{bmatrix} 1 & -2 \\ 2 & 0 \end{bmatrix}$$

TRY

$$-3Y + 2\begin{bmatrix} 6 & 9 \\ -12 & 15 \end{bmatrix} = \begin{bmatrix} 27 & -18 \\ 30 & 6 \end{bmatrix}$$

$$-3Y + \begin{bmatrix} 12 & 18 \\ -24 & 30 \end{bmatrix} = \begin{bmatrix} 27 & -18 \\ 30 & 6 \end{bmatrix}$$

$$-3Y = \begin{bmatrix} 27 & -18 \\ 30 & 6 \end{bmatrix} - \begin{bmatrix} 12 & 18 \\ -24 & 30 \end{bmatrix}$$

$$-\frac{1}{3} \cdot -3Y = \left(-\frac{1}{3}\right) \cdot \begin{bmatrix} 15 & -36 \\ 54 & -24 \end{bmatrix}$$

$$Y = \begin{bmatrix} -5 & 12 \\ -18 & 8 \end{bmatrix}$$

$$\begin{bmatrix} 5 & -12 \\ 18 & -8 \end{bmatrix}$$

$$\begin{bmatrix} -5 & 12 \\ -18 & 8 \end{bmatrix}$$

CHECK:

$$-3\begin{bmatrix} -5 & 12 \\ -18 & 8 \end{bmatrix} + 2\begin{bmatrix} 6 & 9 \\ -12 & 15 \end{bmatrix} = \begin{bmatrix} 27 & -18 \\ 30 & 6 \end{bmatrix}$$

Multiplying 2 matrices

$$A = \begin{bmatrix} -1 & 0 \\ 3 & -4 \end{bmatrix} \qquad B = \begin{bmatrix} -3 & 3 \\ 5 & 0 \end{bmatrix}$$

$$AB = \begin{bmatrix} -1(-3)+0(5) & -1(3)+0(0) \\ 3(-3)+-4(5) & 3(3)+-4(0) \end{bmatrix}$$

$$= \begin{bmatrix} 3+0 & -3+0 \\ -9-20 & 9+0 \end{bmatrix}$$

$$AB = \begin{bmatrix} 3 & -3 \\ -29 & 9 \end{bmatrix} \qquad BA = \begin{bmatrix} 12 & -12 \\ -5 & 0 \end{bmatrix}$$

$xy = yx$ ✓ $\qquad AB \neq BA$

If A is $m \times n$ and (m: row, n: column)

B is $n \times p$

then

AB is $m \times p$

NOTE: column of A = rows of B

↑ if not, can't multiply

$(2 \times 2)(2 \times 2)$ (A, B)

$AB \Rightarrow 2 \times 2$

$(4 \times 2)(2 \times 1)$ (A, B)

$AB = (4 \times 1)$

HW: 4.3 (p. 186)

1, 4, 9, 11, 12

① 20-24, 36

② 14-16, 20-24

→ TEST CORRECTIONS ① answer ② why it was wrong.

→ COOKIE WRITEUP

→ EXTENDED PROBLEM